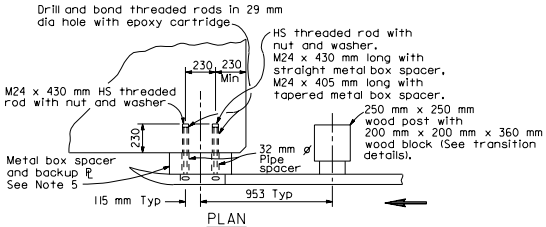
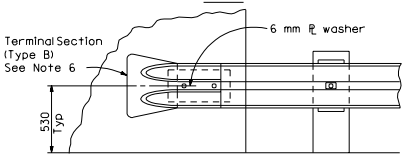


PLAN



ELEVATION

GUARD RAILING END CONNECTION TO WALL OR ABUTMENT FACE

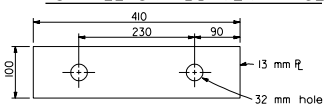


PLATE WASHER

(For backside of bridge railing)

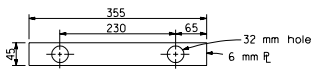
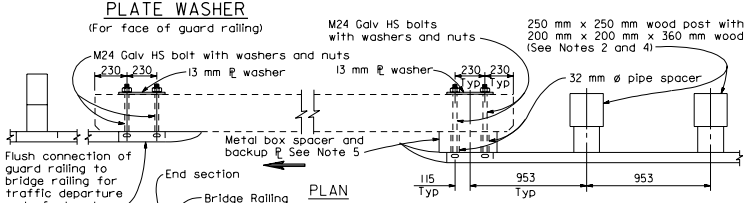
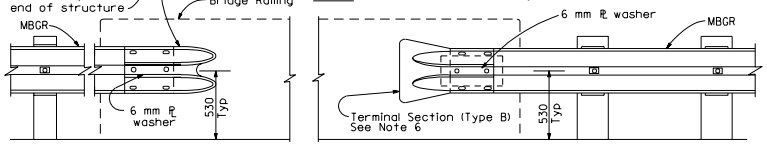


PLATE WASHER

(For face of guard railing)



PLAN

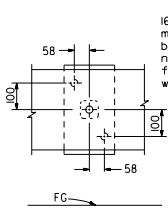


CONNECTION DETAIL B
See Note 7

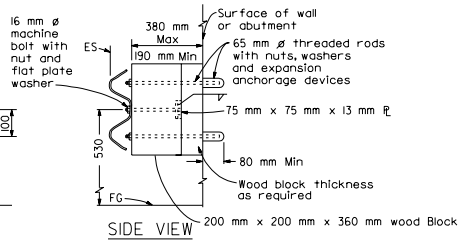
ELEVATION

CONNECTION DETAIL A
See Note 7

GUARD RAILING CONNECTION TO BRIDGE RAILING



FRONT VIEW

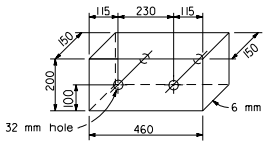


SIDE VIEW

ELEVATION

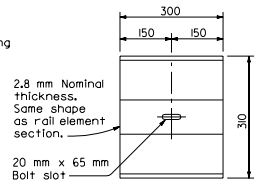
GUARD RAILING ANCHORAGE TO WALL OR ABUTMENT FACE

(Use this type of anchorage where guard railing is required across face of wall or abutment)
See Notes 8 and 9



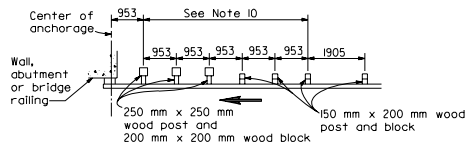
STRAIGHT METAL BOX SPACER

Use where approach guard railing is parallel to bridge railing, wall or abutment face at the point of connection.
See Note 5



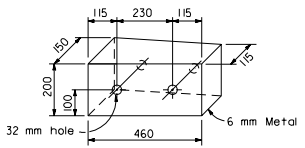
BACK-UP PLATE

For use between guard rail element and metal box spacer.



APPROACH RAILING TRANSITION

Wood post and blocks



TAPERED METAL BOX SPACER

Use where approach guard railing is not parallel to bridge railing, wall or abutment face at the point of connection.
See Note 5

NOTES

1. These connection details apply to bridge railings, abutments and retaining walls. For additional connection details for bridge railing, see Standard Plan B11-53, B11-54, B11-55 and B11-56 and the project plans. See Standard Plan A77K for connection details to bridges with sidewalks or curbs.
2. Additional details of post, blocks and hardware are shown on Standard Plans A77B, A77C and A77CA.
3. Direction of traffic indicated by →
4. For traffic approach railing details, see Standard Plans A77D, A77E and the "Approach Railing Transition Details" on this plan.
5. When metal box spacer is installed, place M24 bolts through 32 mm ø x 125 mm and 32 mm ø x 100 mm pipe spacers within tapered box spacer and place M24 bolts through 32 mm ø x 130 mm pipe spacers within straight box spacer.
6. Terminal sections not to be installed on trailing end of approach guard railing constructed adjacent to one-way roadways. When terminal section is not installed, use backup plate between rail element and metal box spacer. See Standard Plan A77B for backup plate details.
7. In addition to the use of "Connection Detail B" for traffic departure ends of structure, "Connection Detail B" shall be used on the traffic approach ends of structure on two-way roadways which are 18 m or less in width. Where "Connection Detail B" is used at the traffic approach ends of structures, the size and spacing of posts and blocks shall be as shown in the "Approach Railing Transition" detail on this plan.
8. Use timber shims without posts where clearance between rail element and wall or abutment is less than 380 mm.
9. Do Not attach railing to bridge columns. Use separate posts as shown on Standard Plan A77E.
10. Use a flat plate washer on the rail face when attaching rail element to these posts. Wood post with wood block are only to be used for these posts and blocks.

Caltrans Metric

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Ellis K. Hirst
REGISTERED CIVIL ENGINEER
July 1, 1999
PLANS APPROVAL DATE
REGISTERED PROFESSIONAL ENGINEER — Ellis K. Hirst — No. C17926 — Exp. 6-30-01 — CIVIL — STATE OF CALIFORNIA
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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING CONNECTIONS TO BRIDGE RAILINGS, RETAINING WALLS AND ABUTMENTS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A77J

1999 STD. PLAN A77J